WHAT IS CLAIMED IS:

1. A mobilizable combinatorial gene expression library, comprising a pool of expression constructs, each expression construct comprising a shuttle vector capable of replicating in different species or strains of host cell, said shuttle vector containing a cDNA or genomic DNA fragment derived from a plurality of species of donor organisms, wherein the cDNA or genomic DNA fragment is operably-associated with one or more regulatory regions that drives expression of genes encoded by the cDNA or genomic DNA fragment in an appropriate host organism.

2. The gene expression library of claim 1 wherein the cDNA or genomic DNA fragments contained in the expression constructs are randomly concatenated, and are derived from one or more species of donor organisms.

3. The gene expression library of claim 1 wherein some of the cDNA or genomic DNA fragments contained in the expression constructs are preselected for a specific property.

4. The gene expression library of Claim 1, 2 or 3 in which the expression construct comprises a plasmid vector, a phage, a viral vector, a cosmid vector, or an artificial chromosome.

5. The gene expression library of Claim 1, 2 or 3 in which the shuttle vector further comprises an origin of transfer.

6. The gene expression library of Claim 1, 2 or 3 in which the donor organisms comprise a mixture of microorganisms.

7. The gene expression library of Claim 1, 2 or 3 in which each expression construct is contained in a host cell.

8. The gene expression library of Claim 7 in which the host cells have been modified by the introduction, induction or overproduction of a known metabolic pathway of interest or portion thereof.

9. The gene expression library of Claim 7 in which the host cell is Escherichia coli, Bacillus subtilis, Streptomyces lividans, Streptomyces coelicolor, Pseudomonas aeruginosa, Myxococcus xanthus, Saccharomyces cerevisiae, Schizosaccharomyces pombe, Spodoptera frugiperda, Aspergillus nidulans, Arabidopsis thaliana, Nicotiana tabacum, COS cells, 293 cells, VERO cells, NIH/3T3 cells, or CHO cells.

10. The gene expression library of Claim 7 in which the host cells further contain a reporter regimen tailored to

identify clones in the library that are expressing desirable metabolic pathways or compounds.

11. The gene expression library of Claim 7 in which the reporter regimen comprises DNA encoding a reporter gene operably-associated with a regulatory region that is inducible or modulated by the desirable metabolic pathways or compounds expressed by the host cell.

12. The gene expression library of Claim 7 in which the host cells are in a matrix containing a reporter regimen tailored to identify clones in the library that are expressing desirable metabolic pathways or compounds.

13. A method for making a mobilizable combinatorial gene expression library, comprising ligating a shuttle vector, capable of replicating in different species or strains of host cell, to cDNA or genomic DNA fragments to form expression constructs, wherein said cDNA or genomic DNA fragments are obtained from a plurality of species of donor organisms, and wherein the genes contained in the cDNA or genomic DNA fragments are operably-associated with their native or exogenous regulatory regions which drive expression of the genes in an appropriate host cell.

14. The method of claim 13 wherein the cDNA or genomic DNA fragments contained in the expression constructs

are randomly concatenated, and are derived from one or more species of donor organisms.

15. The method of claim 13 wherein some of the cDNA or genomic DNA fragments contained in the expression constructs are preselected for a specific property.

16. The method of Claim 13, 14 or 15 in which the DNA vector is a plasmid vector, a phage, a viral vector, a cosmid vector, or an artificial chromosome.

17. The method of Claim 13, 14 or 15 in which the shuttle vector further comprises an origin of transfer.

18. A method for making a combinatorial gene expression library comprising transferring a pool of expression constructs in a species of host organism to another species or strain of host organism, said expression construct comprising a shuttle vector capable of replicating in different species or strains of host cell, said shuttle vector comprising cDNA or genomic DNA fragments obtained from a plurality of species of donor organisms, wherein the genes contained in the cDNA or genomic DNA fragments are operably-associated with their native or exogenous regulatory regions which drive expression of the genes in an appropriate host cell.

19. The method of claim 18 wherein the pool of expression constructs is transferred by conjugation.

20. The method of claim 18 wherein the pool of expression constructs is transferred by isolating the expression constructs from a first species of host organism, and introducing the expression constructs into a second species or strain of host organism.

21. The method of claim 20 wherein the expression constructs are introduced into a second species or strain of organisms by transformation, transfection, infection or electroporation.

22. A cosmid vector comprising an autonomously replicating sequence of Schizosaccharomyces pombe.

23. The cosmid vector of claim 22, which is pPCos+ura.

24. The cosmid vector of claim 22, which is pPCos1.

25. The gene expression library of claim 3 wherein the cDNA or genomic DNA fragments are preselected for homology to nucleic acid sequences encoding proteins in a metabolic pathway.

26. The method of claim 15 wherein the cDNA or genomic DNA fragments ~~are~~ preselected for homology to nucleic acid sequences encoding proteins in a metabolic pathway.